

HCPL-3020/ 0302

0.2 A Output Current Gate Drive Optocoupler

from Agilent Technologies

The HCPL-3020 in DIP-8 and HCPL-0302 in SO-8 package complement Agilent's existing family of gate drive optocouplers. The new 0.2 A devices consist of GaAsP LEDs optically coupled to an integrated circuit with a power output stage. The current rating, combined with the high common mode rejection (CMR), fast switching and latch-up performance uniquely qualify these optocouplers for low-power inverter gate drive applications. The high operating voltage ranges of the HCPL-3020 and HCPL-0302 output stages provide the drive voltages required by MOS-gated devices like IGBTs or MOSFETs. The voltage and current provided by these optocouplers make it suitable for driving IGBTs with rating up to 1200 V/ 20 A. For IGBTs with higher ratings, the HCPL-0314/3140 (0.4 A), HCPL-3150 (0.5 A) or HCPL-3120 (2 A) can be used. The HCPL-3020 and HCPL-0302 are among the cheapest solutions available for driving MOS-gated devices in a safe, efficient, reliable and cost-effective way. Besides ease of implementation, the HCPL-3020 and HCPL-0302 also excel in power consumption. The low supply current of 3 mA allows

bootstrap techniques, thus eliminating additional isolated power supplies for gate drive circuitry. Using discrete power IGBTs or MOSFETs together with gate drive optoisolators instead of integrated modules allows the designer to control the gate signal flow. This makes it possible to change the switching speed and related EMI behavior. Compared with high-voltage integrated circuits (HVICs) Agilent's optocouplers offer superior galvanic isolation. The optoisolators feature a proprietary internal Faraday shield, which provides the best common-mode rejection (CMR) performance of any competing isolation solution.

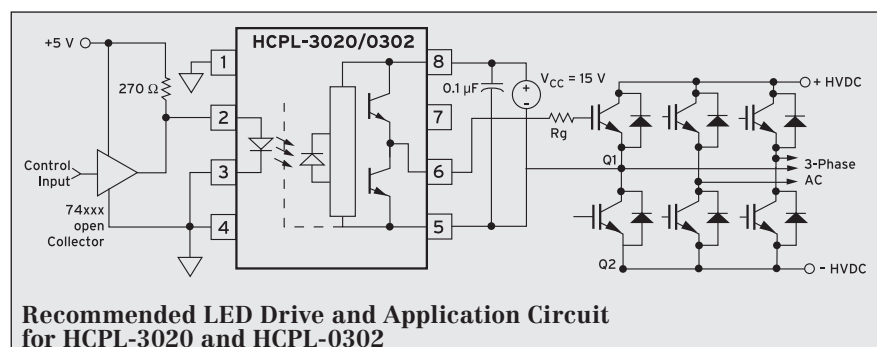
Features

- 0.2 A min. peak output current
- High-speed response: 0.7 μ s max. propagation delay over temp. range

- Ultra-high CMR: min. 10 kV/ μ s @ $V_{CM} = 1000$ V
- Bootstrappable supply current: max. 3 mA
- Wide operating temp. range: -40...+100 °C
- Wide V_{CC} operating range: 10...30 V overtemp. range
- DIP-8 and SO-8 packages
- UL approval: 2500 V_{RMS} for 1 minute
- CSA approval pending
- VDE approval pending:
 - $V_{IORM} = 630$ V_{PEAK} (HCPL-3020)
 - $V_{IORM} = 566$ V_{PEAK} (HCPL-0302)

Applications

- Isolated IGBT/power MOSFET gate drive
- AC and brushless DC motor drives
- Industrial inverters
- Air conditioners
- Washing machines
- Induction heaters for cookers
- Switching power supplies (SPS)



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